

# THE AUSTRALIAN NATURALIST

A. E. WATSON MEMORIAL ISSUE

THE JOURNAL OF

## The Naturalists' Society

of New South Wales

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# The Naturalists' Society

## OF NEW SOUTH WALES

Council. 1958-1959.

*President:* Mrs. P. R. Messmer.

*Vice-Presidents:* Miss K. English, Mr. A. E. Watson, Mr. E. H. Zeck.

*Hon. Secretary:* Mrs. A. N. Croucher, 6 Carinya Ave.,  
Brighton-le-Sands. LX 6184.

*Assistant Hon. Secretary:* Miss D. Dobbin.

*Hon. Treasurer:* Mrs. R. J. Watson.

*Hon. Editor:* Mr. E. H. Zeck.

*Hon. Lanternists:* Mr. J. Adkins, Mr. C. V. Nathan.

*Hon. Librarian:* Mr. C. V. Nathan.

### *Council Members:*

Miss G. Brewin, Miss I. Bowden, Mrs. W. Campbell, Miss M. Davidson, Mr. R. Henning, Mr. R. Hillsmith, Mr. A. Holmes, Miss N. Luckie, Miss C. Salvia, Miss M. Wickham, Mrs. E. H. Zeck.

### *Publication Committee:*

The President, Hon. Editor, and Hon. Secretary.  
*Acting Editors of this Issue:* Miss G. Brewin, B.A., and  
Miss K. English, B.Sc., 2 Shirley Road, Roseville.

## NOTICES

Meetings of the Naturalists' Society are held on the first Tuesday of every month, except January, in the Salvation Army Headquarters' Building, 140 Elizabeth St., (Clark Street entrance), at 7.30 p.m. Members are reminded that exhibits and notes of field observations are welcome, and also that visitors may be brought to meetings or outings.

**The Journal may be obtained from the Hon. Secretary. Price 3s.**  
Postage extra. The Journal is issued free to members.

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Country Members 4/-.



Mr. A. E. WATSON

Vol. XII

JULY, 1960.

Pt. I

### EDITORIAL

It is regretted that no Journal was issued last year owing to unforeseen circumstances. The newly appointed Editor was called away on a scientific expedition so two members have undertaken the work and hope to follow this with Part II. (1959-60) in the near future.

This issue starts Volume XII, and it is to be hoped that more members will contribute more to their Journal on anything of popular or scientific interest to Naturalists generally.

Our Meetings continue to be held in a very pleasant room in the Salvation Army Headquarters, and we are proud to announce our members remain constant in their attendance. A list of meetings and outings appears elsewhere in this Journal.

### OBITUARY

With deep regret we record the death of Mr. Albert Edward Watson who passed away at his home on August 25th, 1958, in his ninetieth year. The photograph shows him as he so often led the Naturalists on their excursions.

A lover of all Nature in its many aspects he was especially interested in Botany, and as he was a school teacher he was able to present his information in a most capable and interesting manner, and his advice was always respected by our members.

He joined the Naturalists' Society about 1912 and later was President for many years. He took a keen interest in tree planting and at the annual tree plantings many of the trees were raised from seed planted by him year after year.

He was a Council member of the Gould League of Bird Lovers for over thirty years and a member of the Wattle League later incorporated in this Society.

The Naturalists' Society misses a much loved figure from its meetings and excursions.

We also express our deep regret at the death of Mrs. Duffin—a member of many years' standing, and of Mr. A. Musgrave, Curator of Insects at the Australian Museum who had lectured to us only a few nights before his death.

## EXTRACTS FROM THE HON. SECRETARY'S REPORT

Although its membership is slightly lower than in previous years as the names of unfinancial members were removed from the register, the Society had a successful year with its efforts to forward Nature Conservation.

Because of our representations early in 1959 Bega Council decided to make a firebreak round a bushland park noted for its bird-life, though most people in the area were apathetic about the matter.

Also the A. E. Watson Memorial Park was established. Our thanks are due to the Rockdale Council for the half acre of land given us for that purpose. The first planting took place on Wattle Day, August 1, which was most appropriate as Mr. Watson was a foundation member of the Wattle League, now incorporated with the Naturalists' Society.

The usual Tree planting was done at Ball's Head on the last Saturday in May, this being our 30th annual planting.

Many outings, a list of which follows, were held during the year and were usually well attended.

We were pleased to receive a legacy from the estate of the late Mr. Bryce, a member of Council, which will be put to good use in furthering the aims of the Society.

## WATTLE DAY, 1958

At the Wattle planting at Stott's Reserve on August 2nd, Mr. A. E. Watson told us something of the history of Wattle Day. In August, 1909, three people, Mrs. Clunies Ross, Mr. Kettlewell, and Mr. J. H. Maiden decided that Australia should have a national emblem, and they chose the Acacia as it was the only flower common to every State. The word Acacia is of Greek origin and means "prickly" and this is true of most varieties. The Australian Acacias are exclusive to this country with the exception of *Acacia Farnesiana*, which is also found in the interior of Africa. Acacias have another virtue; different varieties bloom throughout the year. The name Wattle was given to our Acacias by early settlers who used the Acacia branches for making their wattle and mud-daubed huts, so the early Anglo-Saxon word, "wattle", meaning "wand" or "withy", became an Australian name for our Acacias. The Wattle League was amalgamated with the Naturalists' Society of N.S.W. in 1952, and we have carried on with the tradition of Wattle planting on the Saturday nearest August the First, the foundation of Wattle Day.

A. N. Croucher.

## MEETINGS, 1958-1959.

- August 5, 1958. Annual Meeting. Presidential Address by Mr. E. H. Zeck on "Ants, Wasps and Bees."
- Sept. 2. Members' Night.
- Oct. 7. Speaker: Mr. A. A. Clemson, Dept. of Agriculture (Apiculture) gave an illustrated address on "Bee-keeping in N.S.W."
- Nov. 4. Speaker: Mr. A. Holmes, spoke on "Some Experiences with Reptiles."
- Dec. 2. Speaker: Miss P. Croucher spoke on "Methods of Identifying types of Fruits."
- Feb. 3. 1959. Speaker: Miss P. Croucher spoke on "Marine Biology."
- Mar. 3. Members' Night.
- April 7. Speaker: Mr. H. McKern, Chemist, Museum of Applied Arts & Sciences spoke on "Identification of Eucalypts."
- May 5. Speaker: Mr. Newman, formerly of the Sydney Weather Bureau, spoke on "Weather Conditions and Forecasts."
- June 2. Speaker: Mr. A. Musgrave, Curator of Insects, Australian Museum, gave an illustrated address on "Wandering round Thirsty Sound, North Queensland."

## OUTINGS, 1958-1959.

1958.

- Aug. 2. Wattle Planting at Stott's Reserve, Bexley North.
- Aug. 16. Brookvale. Visit to Manly-Warringah Flora and Fauna Society's Stoney Range Reserve.
- Aug. 30. East Jannali.
- Sept. 13. Bundeena.
- Sept. 27. Bus Trip to Maralya.
- Oct. 4. Vaucluse Park (Half day).
- Oct. 6. Heathcote. (6 Hr. Day).
- Oct. 18. Mt. Ku-ring-gai.
- Nov. 1. Malabar.
- Nov. 15. Pennant Hills.
- Nov. 29. Oxford Falls.
- Dec. 20. Xmas Outing. Lindfield Park and to Mrs. Messmer's garden for pictures of her visit to Western Victoria.
- Jan. 1, 1959. Forty Baskets Beach.
- Jan. 26. Little Bay.
- Jan. 31. Bardwell Park.
- Feb. 28. Forty Baskets Beach.
- Mar. 14. Centennial Park.
- Mar. 28. Heathcote.
- Mar. 30. Mt. Ku-ring-gai.
- April 4. Ashton Park.
- Apr. 18. Prospect.
- May 9. Plantation at the Museum of Applied Arts and Sciences.
- May 16. Bus Trip to Cataract Dam.
- May 30. Ball's Head (Tree planting).
- July 4. Calna Creek.
- July 18. Engadine Falls.

**NATURALISTS' SOCIETY OF NEW SOUTH WALES  
STATEMENT OF RECEIPTS AND PAYMENTS**

For the Year Ended 30th June, 1959.

RECEIPTS			PAYMENTS		
Bank Balance 1/7/58	185	0 6	Rent . . . . .	22	0 0
Subscriptions . . . .	60	12 6	Postage on Circulars	8	13 6
Donations and Profit on Bus Trips . . . . .	36	5 0	Printing . . . . .	7	0 4
Sale of Bookcase . . .	10	0 0	Stationery & Rubber Stamp . . . . .	19	15 9
Bank Interest 30/6/1959 . . . . .	5	12 1	Bookcase . . . . .	20	0 0
			Secretary's Expenses	5	6 10
			Subscriptions . . . .	3	2 0
			Forestry Commis- sion . . . . .	2	0 0
			Donations . . . . .	15	4 0
			Bank Balance 1/7/59	184	2 8
			Cash in hand . . . .	15	0 0
	£288	0 1		£288	0 1

**EQUIPMENT ACCOUNT**

RECEIPTS			PAYMENTS		
Bank Balance 30/6/1958 . . . . .	10	14 10	Expenses nil		
Donation . . . . .	5	5 0	Bank Balance 1/7/59	118	2 9
Donation—Estate of E. J. Bryce . . . . .	101	11 4			
Bank Interest 30/6/59 . . . . .	11	7			
	£118	2 9		£118	2 9

**LIBRARY NOTES**

Since the last issue of the Journal the Society has acquired two commodious steel bookcases, one of which was bought with a donation from Miss M. Davidson and with portion of the generous donation bequeathed to it by the late Mr. E. J. Bryce. Other members including Miss Dobbin, Miss Petersen, Miss M. Debbin, and Mr. Hillsmith have donated books and Museum magazines to the Library. Miss Florence Sulman has given the Society a most generous gift—her personal library of valuable books on Botany, Nature Study and general subjects. We are indeed grateful to her for such a magnificent addition to the Library.

We are extremely grateful to the Salvation Army for allowing us space for bookshelves in their pleasant meeting room.

This Library is free to all adult members, but they should keep the by-laws and notify the Librarian if they wish to keep a book longer than the stipulated time of one month.

C. V. Nathan.



## BUTTERFLIES RECORDED FROM THE ILLAWARRA DISTRICT

By C. E. Chadwick.

As the term Illawarra has been frequently misused for the St. George district within the metropolitan area, the limits of the St. George district might well be defined for a start. The area to be included in the St. George County Council was indicated in a proclamation published in the Government Gazette on 29th October, 1920. It includes the municipalities of Bexley, Hurstville, Kogarah and Rockdale. The area was indicated as long ago as 1848 in the publication "A Geographical Dictionary or Gazetteer of the Australian Colonies" by William Henry Wells (Surveyor) from which the following may be quoted:

"St. George. A parish in the hundred of Sydney, in the County of Cumberland, N.S.W.; it contains 132 houses, with a population of 611 and is bounded on the north by Cook's River from Botany Bay to the centre of the road to the north corner of Joseph Broadbent's 40 acres; on the west by the centre of the abovementioned road which forms the north-west boundaries of Joseph Broadbent's 40 acres, William Goodwin's 50 acres and John Nichols's 100 acres and to the head of Saltpan Creek at the West corner of John Nichols's 100 acres and by that creek to its confluence with George's River; on the south by George's River to Botany Bay; and on the east by Botany Bay to Cook's River."

Unfortunately the Illawarra District has not been gazetted and has been used with a good deal of elasticity. However, for the people living in the district the following boundaries have been pretty generally accepted. Stanwell Park is taken as the northern extremity and the area is an elongated triangle bounded by the Illawarra and Cambewarra Ranges on the west, the Shoalhaven River in the South and the sea coast on the east. (See map.)

The Illawarra District was a popular collecting place for entomologists from early days and still contains much interesting insect life, including undescribed species. Butterflies, being the most beautiful forms of insect life, have attracted collectors for many years, although most of them left no written records. Dr. G. A. Waterhouse however left records of specimens collected in the Stanwell Park, Clifton and Bulli areas as long ago as the closing years of last century.

Of the nine families of butterflies recognised by Waterhouse ("What Butterfly Is That?" 1932), seven occur in the Illawarra district, the other two consisting each of two species recorded only from Northern Australia. The present list includes five *Papilionidae* (Swallowtails), twelve *Pieridae* (Whites and Yellows), four *Danaidae* (Danais), five *Nymphalidae* (Nymphs), nine *Satyridae* (Browns), twenty-one *Lycaenidae* (Coppers, Blues and Hairstreaks) and twenty-six *Hesperiidae* (Skippers), a total of eighty-two species.

This list is compiled from definite records, mostly by Dr. Waterhouse and by Messrs. D. A. Walsh of Mt. Keira, L. I. Cady of Kiama, and the author in more recent years, i.e. over a period of more than sixty years. Only authentic records have been included, some doubtful ones being excluded. The months during which butterflies have been collected are indicated by figures, e.g., January by 1, February by 2, and so on. In some cases the years of occurrence of the more uncommon species have been in-



cluded. Sometimes specimens which appeared to be authentic lacked information on the date of collection, but have been included. Undoubtedly some species have yet to be recorded and the months of occurrence of others will be extended, but the list should be a good starting point for a more intensive study of the butterflies of the district.

### LIST OF RHOPLOCERA

#### PAPILIONIDAE.—Swallowtails.

- Papilio aegeus aegeus* Donovan. Large Citrus Butterfly. 1 2 3 4 10 11 12.  
*Papilio demoleus sthenelus* Macleay. Chequered Swallowtail. 3.  
*Papilio anactus* Macleay. Small Citrus Butterfly. 1 4 10 11.  
*Papilio macleayanus* Leach. Macleay's Swallowtail. 1 2 3 4 8 9 10 11 12.  
*Papilio sarpedon choredon* Felder. Blue Triangle, Blue Fanny, 2 3 4 5 10 11 12.

#### PIERIDAE.—Whites and Yellows.

- Delias aganippe* Donovan. Wood white. 11.  
*Delias nysa nysa* Fabricius. Nysa Jezabel. 1 3 4 12.  
*Delias nigra* Fabricius. Common Jezabel. 1 2 3 5 9 10 11 12.  
*Delias harpalyce* Donovan. Imperial White. 3 4 9 11.  
*Catopsilia pyranthe pythias* Waterhouse & Lyell. Common Migrant. 6 9.  
*Catopsilia scylla gorgophone* Boisduval. Yellow Migrant. 2.  
*Appias paulina ega* Boisduval. Common Albatross. 1 2.  
*Anaphaeis java teutonia* Fabricius. Caper White or Migratory White. 1 9 11 12.  
*Terias hecabe sulphurata* Butler. Common Grass Yellow.  
*Terias smilax* Donovan. Small Grass Yellow. 2.  
*Terias libythea zoraide* Felder. No-brand Grass Yellow. 4.  
*Pieris rapae Linnaeus*. Cabbage Butterfly. All months.

#### DANAIDAE.—Danaids.

- Danaida plexippus* Linnaeus. Wanderer. 1 2 3 4 5 7 10 11.  
*Danaida chrysippus petilia* Stoll. Lesser Wanderer. 2.  
*Danaida melissa hamata* Macleay. Blue Tiger. 2 (1955), 11 (1959).  
*Euploea care corinna* Macleay. Oleander Butterfly. 2 3 5 6 (1948 and 1955).

#### NYMPHALIDAE.—Nymphs.

- Hypolimnas bolina nerina* Fabricius. Common Eggfly or Moon Butterfly. 3 (1956).  
*Eriboea pyrrius sempronius* Fabricius. Tailed Emperor. 2 3.  
*Precis villida calybe*. Godart. Meadow Argus. 1 2 3 4 9 11 12.  
*Pyrameis cardui kershawi* McCoy. Australian Painted Lady. 2 10 11.  
*Pyrameis itea* Fabricius. Australian Admiral. 1 2 11.

#### SATYRIDAE.—Browns.

- Heteronympha banksi* Leach. Banks' Brown. 3 4.  
*Heteronympha paredelpha* Lower. Spotted Brown. 3.  
*Heteronympha merope merope* Fabricius. Common Brown. 2 3 4 11 12.  
*Heteronympha mirifica* Butler. Wonder Brown. 1 2 3 4 11 12.  
*Xenica klugi* Guerin. Klug's Xenica. 1.  
*Tisiphone abeona abeona* Donovan. Sword-grass Brown. 2 4 10 11.  
*Hypocysta euphemia* Westwood. Rock Ringlet. 1 3 4 12.  
*Hypocysta metirius* Butler. Common Brown Ringlet. 2 3 4 5 10.  
*Argynnina hobartia cyrila* Waterhouse and Lyell. Cyril's Brown. 11.

## LYCAENIDAE.—Coppers, Blues and Hairstreaks.

- Candalides absimilis* Felder. Pencilled Blue. 1 2 3 8 9.  
*Candalides heathi heathi* Cox. Rayed Blue. 1 2 3 12.  
*Candalides hyacinthina hyacinthina* Semper. Common Dusky Blue.  
 1 2 3 9 12.  
*Candalides cyprotus* Olliff. Cyprotus Blue. 8 9 12.  
*Candalides xanthospilos* Hubner. Yellow-spot Blue. 1 2 3 9 10 11 12  
*Candalides acasta* Cox. Blotched Blue. 1 2 3 11.  
*Pseudodipsas brisbanensis brisbanensis* Miskin. Large Ant-blue. 10.  
*Miletus ignita ignita* Leach. Fiery Jewel. 2 11.  
*Miletus delicia delicia* Hewitson. Blue Jewel.  
*Nacaduba ancyra florinda* Butler. Speckled Line Blue.  
*Nacaduba biocellata* Felder. Double-spotted Line Blue. 1 2 3 9.  
*Nacaduba felderi* Murray. Felder's Line Blue. 3 4.  
*Nacaduba lineata* Murray. Hairy Line Blue. 3 4.  
*Zizeeria labradus labradus* Godart. Common Grass Blue. 1 2 3 4  
 9 10.  
*Paralucia aurifer* Blanchard. Bright Copper. 2 12.  
*Lucia lucanus* Fabricius. Small Copper. 4 8.  
*Neolucia serpentata* Herrick-Schaeffer. Chequered Blue. 3 4.  
*Neolucia sulphitius sulphitius* Miskin. Saltpan Blue. 2 3.  
*Ogyris abrota* Westwood. Dark purple Azure. 1 2 3 4 10.  
*Ogyris zozine araxes* Waterhouse & Lyell. Purple Azure. 2 3 9 10  
 11 12.  
*Ialmenus evagoras evagoras* Donovan. Common Imperial Blue.  
 1 2 11 12.

## HESPERIIDAE.—Skippers.

- Phoenicops beata* Hewitson. Common Red Eye.  
*Trapezites eliena eliena* Hewitson. Eliena Skipper. 2.  
*Trapezites symmomus symmomus* Hubner. Symmomus Skipper.  
 2 3 4.  
*Trapezites maheta praxedes* Plotz. Maheta Skipper. 2 3.  
*Trapezites petalia* Hewitson. Common White Spot Skipper. 3.  
*Pasma tasmanica* Miskin. Tasmanica Skipper.  
*Signeta flammeata* Butler. Bright Shield Skipper. 2 3.  
*Signeta tymbophora* Meyr. & Lower. Dingy Shield Skipper. 2 3.  
*Mesodina halyzia halyzia* Hewitson. Halyzia Skipper. 1 2 3.  
*Toxidia doubledayi* Felder. Doubleday's Skipper. 2 10.  
*Toxidia leucostigma leucostigma* Meyr. & Lower. White Brand  
 Skipper.  
*Toxidia parvula* Plotz. Parvula Skipper. 3 4.  
*Toxidia peroni*. Large Dingy Skipper. 10 11.  
*Dispar compacta* Butler. Dispar Skipper. 1 2 3.  
*Hesperilla andersoni* Kirby. Anderson's Skipper.  
*Hesperilla donnysa donnysa* Hewitson. Donnysa Skipper. 10.  
*Hesperilla idothea idothea* Miskin. Flame Skipper. 11 (1959).  
*Hesperilla mastersi* Waterhouse. Master's Skipper. 1 2.  
*Hesperilla picta* Leach. Painted Skipper. 3 4.  
*Hesperilla crypsargyra crypsargyra* Meyrick. Silvered Skipper.  
*Hesperilla ornata ornata* Leach. Spotted Skipper. 12.  
*Taractrocera papyria papyria* Boisduval. White Grass Dart. 2 3 4 11.  
*Padraona flavovittata flavovittata* Latreille. Yellow Banded Dart.  
 2 3 4.  
*Padraona lascivia lascivia* Rosenstock. Dingy Dart. 2 3 4.  
*Cephenes augiades sperthias* Felder. Orange Palm Dart. 2 4.  
*Astycus ancilla ancilla* Herrich-Schaeffer. Greenish Darter. 3 4.

## ACKNOWLEDGEMENT

The author is grateful to Mr. J. L. Wood for the accompanying map of the Illawarra District.

## ORCHIDS OF THE ILLAWARRA DISTRICT

By L. Cady.

(Communicated by C. E. Chadwick.)

This list is compiled from the author's Herbarium and from records of positive identification from local sources. It is not meant to be a comprehensive list—new names being added to it each season.

All native orchids listed in this district belong to the sub-family *Monandreae*, and within this sub-family all our genera belong to the *Acrotonae* (in which the anther falls off easily). *Acrotonae* is again divided into two groups, *Acranthae* and *Pleuranthae*. The species in this paper are placed in these two groups.

## Group A.—ACRANTHAE.

## Tribe 1.—NEOTTIINAE.

Sub-Tribe THELYMITREAE—Genus *Thelymitra*.

1. *T. ixioides* Sw. "Dotted Sun Orchid". Jamberoo Mt., Minnamurra Falls. In sandstone and red loam. Alt. 500 to 2100 feet, on swampy flats and drier slopes. Flowering Oct. to Jan.
2. *T. media* R.Br. "Tall Sun Orchid". Jamberoo Mt. Sandstone and marshy flats. Alt. 2000 ft. app. Flowering Sept.—Oct.
3. *T. rubra* Fitzg. "Pink Sun Orchid". "Budderoo Track", Jamberoo Mt. on swampy flats and sandstone. Alt. 2000 ft. Fl. Sept.—Oct.
4. *T. pauciflora* R.Br. "Slender Sun Orchid". Jamberoo Mt. Sandstone, on swampy flats and drier slopes. Alt. 2000 ft. Fl. Sept.—Dec.

Sub-Tribe DIURIDAE—Genus (1) *Diuris*.

- D. sulphurea* R.Br. "Sulphur *Diuris*". Jamberoo Mt., edge of road, sandstone. Alt. 2100 ft. Fl. Aug.—Nov.
- D. punctata* Sm. (very rare). "The Purple *Diuris*". West Dapto, red loam. Alt. 100 ft. approx. Fl. Aug.—Dec.
- Genus (2) *Orthoceras*. *O. strictum* R.Br. "Horned Orchid". Jamberoo Mt., sandstone, swampy flats. Alt. 2000 ft. Fl. Nov.—Feb.
- Genus (3) *Microtis*. *M. unifolia* (Forst) Reichb.f. "Common Onion Orchid". Stanwell Tops, sandstone. Minnamurra Falls, red loam. Alt. 200 to 1500 ft. Fl. Sept.—Dec.
- M. parviflora* R.Br. "Small Tongue Onion Orchid". Minnamurra Falls in red soil, edge of rain forest. Alt. 200 ft. Fl. Sept.—Feb.
- Genus (4) *Prasophyllum* R.Br.

Section A. *Euprasophyllum*.

1. *P. australe* R.Br. "Austral Leek Orchid". Jamberoo Mt. on swampy flats, sandstone. Alt. 2100 ft. Fl. Nov.—Dec.
2. *P. elatum* R.Br. "Tall Leek Orchid". Jamberoo Mt., open heath flats, sandstone. Alt. 2100 ft. Fl. Aug.—Oct.
3. *P. brevilabre* Hook. f. "Short-lipped Leek Orchid". Jamberoo Mt., open marshy flats, sandstone. Alt. 2100 ft. Fl. Aug.—Feb.
4. *P. striatum* R.Br. "Striated Leek Orchid". Jamberoo Mt. sandstone marshy flat. Dapto (no data.) Alt. 2100 ft. Fl. April—May.
5. *P. uroglossum* Rupp. Jamberoo Mt. sandstone, open marshy flats, also under scrub. Alt. 2100 ft. Fl. Nov. Rare.

Section B. *Micranthus* Rupp.

1. *P. aureoviride* Rupp. "Golden-green Leek Orchid". Jamberoo Mt. Sandstone, open flats. Alt. 2100 ft. Fl. March—May.

2. *P. aureoviride*, var. *Elmae* Rupp. Jamberoo Mt. sandstone, open swampy flats. Alt. 2000 ft. Fl. March—May. (By far the most common prasophyllum on the mountain more so than the type.)
3. *P. fimbriatum* R.Br. "Fringed Leek Orchid". Jamberoo Mt., sandstone open swampy flats. Alt. 2000 ft. Fl. Jan.—March.
4. *P. Morrisii* Nicholls. "Hairy Leek Orchid". Jamberoo Mt., edge of bare sandstone patches in moss beds, sandstone. Alt. 2000 ft. Fl. Jan.—April.
5. *P. despectans* Hook. f. "Tiny Leek Orchid". Jamberoo Mt. (N.S.W. record 8/3/1958), sandstone in dry conditions under Eucalypts. Alt. 100 to 2100 ft. (Also collected at Jervis Bay same month). Fl. Feb.—April.

Sub-Tribe DRAKAEINAE—Genus (1) *Caleana*.

- C. major* R.Br. "Large Duck Orchid". Jamberoo Mt., sandstone, under Eucalypts. Alt. 100 to 2000 ft. Fl. Sept.—Dec.
- Genus (2) *Chiloglottis*. 1. *C. reflexa* (Labill.) Druce. "Autumn Bird Orchid". Jamberoo Mt., sandstone, usually in light scrub. Alt. 100 to 2100 ft. Fl. Dec.—April.
2. *C. fornicifera* Fitzg. "The Ant Orchid". Jamberoo Mt., on edge of rain forest, sandstone. Alt. 2100 ft. Fl. usually Sept., but has been recorded in late August.
3. *C. Gunnii* Ldl. "Large Bird Orchid". Jamberoo Mt. (in fair numbers) sandstone, marshy flats. Alt. 2000 ft. Fl. Sept.—Jan.

Sub-Tribe CALADENIEAE. Genus (1) *Acianthus*.

1. *A. exsertus* R.Br. "Mosquito Orchid". Minnamurra Falls, red soil on edge of rain forest. Alt. 200 ft. approx. Fl. April—June, sometimes earlier.
  2. *A. fornicatus* R.Br. "Pixie Cap". Saddleback Mt., red soil at edge of brush. Seven Mile Beach, in grey sand. Many other localities. Alt. 0 to 2100 ft. Fl. May—Sept.
- Genus (2) *Calochilus*. 1. *C. campestris* R.Br. "Peaked Beard Orchid". Jamberoo Mt., sandstone in open forest. Alt. 2100 ft. Fl. Sept.—Nov.
2. *C. Robertsonii* Benth. "Brown Beard". Mt. Kiera, sandstone. Alt. 2000 ft. Fl. Sept.—Nov.
- Genus (3) *Eriochilus*. *E. cucullatus* (Labill.) Reichb. f. "Parson's Bands". Jamberoo Mt., sandstone, swampy flats (very common in district). Alt. 0 to 2100 ft. Fl. Jan.—April.
- Genus (4). *Burnettia*. *B. cuneata* Ldl. "Lizard Orchid or Bog Orchid". Jamberoo Mt., on edge of bog. Alt. 2100 ft. Fl. Sept.—Oct.
- Genus (5). *Glossodia*. *G. minor* R.Br. "Small Wax-lipped Orchid". Jamberoo Mt., sandstone on marshy flats. Alt. 100 to 2100 ft. Fl. July—Sept.
- Genus (6) *Caladenia*. 1. *C. carnea* R.Br. "Pink Finger Orchid". Jamberoo Mt. and other localities, sandstone and red soils. Alt. 0 to 2000 ft. Fl. Aug.—Nov.
2. *C. alba* R.Br. "White Caladenia". Jamberoo Mt. (at shale pit), edge of sandstone country (not common). Alt. 0 to 2000 ft. Fl. July—Oct.
  3. *C. alba* R.Br. var. *picta* Nicholls. Mt. Keira, sandstone in open forest. Alt. 2100 ft. Fl. April—May.

Sub-tribe POGONIEAE. Genus (1) *Corybas*.

1. *C. aconitiflorus* Salisb. "Spurred Helmet Orchid". Minnamurra Falls, on edge of rain forest. Macquarie Pass in rain forest, red soil (in both places). Alt. 0 to 1500 ft. Fl. April—June.
2. *C. fimbriatus* R.Br. "Fringed Helmet Orchid". Seven Mile

Beach, in grey sand. Minnamurra Falls, red soil. Alt. usually sea-level. Fl. May—June.

3. *C. pruinosis* Cunn. "Small Fringed Orchid". Minnamurra Falls, in rain forest, damp situation. Alt. 200 ft. Fl. April—July.
  4. *C. unguiculatus* R.Br. "Small Helmet Orchid". Jamberoo Mt., sandstone under small shrubs on marshy flats. Alt. 2100 ft. Fl. March—May.
- Genus (2) *Cryptostylis*. 1. *C. leptochila* F. v M. "Small Tongue Orchid". Saddleback Mt., in brush forest. Alt. 1500 ft. Fl. Nov.—March.
2. *C. subulata* (Labill.) Reichb. f. "Large Tongue Orchid". Jamberoo Mt. sandstone marshy flats. Alt. 2100 ft. Fl. Nov.—Jan.

Sub-Tribe PTEROSTYLIDAE. Genus *Pterostylis*.

1. *P. Baptistii* Fitzg. "Giant Greenhood". Mt. Keira, sandstone, swamp places. Alt. 2100 ft. Fl. Aug.—Oct.
2. *P. concinna* R.Br. "Trim Greenhood". Seven Mile Beach, in grey sand under *Melaleuca* species. Alt. sea-level. Fl. July—Oct.
3. *P. curta* R.Br. "Blunt Greenhood". Seven Mile Beach (as above). Minnamurra Falls, in red soil in rain forest. Alt. 0 to 2000 ft. Fl. July—Oct., a common plant.
4. *P. falcata* Rogers. "Sickle Greenhood". In swamps on Mt. Keira. Alt. from 2000 ft. Fl. Nov.—Jan.
5. *P. grandiflora* R.Br. "Superb Greenhood". Macquarie Pass, Minnamurra Falls. Red soil. Alt. 0 to 2000 ft. Fl. April—July.
6. *P. Hildae* Nicholls. Kiama, Minnamurra Falls, Dapto, in rain forest, red soil. Alt. usually under 500 ft. Fl. Aug.—Oct.
7. *P. longifolia* R.Br. "The Tall Greenhood". Widespread throughout the district. Alt. 0 to 2500 ft. Fl. April—July.
8. *P. nutans* R.Br. "Nodding Greenhood". Widespread. Many localities. Alt. 0 to 2500. Fl. June—Oct.
9. *P. nutans* R.Br. var. *hispidula* Fitzg. "Early Nodding Greenhood". Minnamurra Falls, Jamberoo Mt., Saddleback Mt., in red soil in rain forest. Alt. 400 to 2100 ft. Fl. April—June.
10. *P. pedunculata* R.Br. "Maroon Hood". Seven Mile Beach, Kiama, Minnamurra Falls, in grey sand and in red soil. Alt. 0 to 1500 ft. Fl. July—Oct.
11. *P. pulchella* Messmer. "Pretty Greenhood". Minnamurra Falls, growing semi-epiphytically on rocks in moss. Alt. 1500 approx. Fl. April—May. (Found only in three localities in Australia, viz., Fitzroy Falls, Belmore Falls, Minnamurra Falls at app. same altitude.)
12. *P. parviflora* R.Br. "Tiny Greenhood". Jamberoo Mt., on sandstone marshy flats. Alt. 0 to 2100 ft. Fl. usually autumn but can flower any time.
13. *P. pusilla* Rog. var. *prominens* Rupp. West Dapto, in clayey soil. Alt. 200 ft. approx. Fl. Oct.—Nov.

Sub-Tribe VANILLEAE. Genus *Galeola*.

- G. cassythoides* Reichb. "Small Climbing Orchid". Mt. Keira, sandstone. Alt. up to 2000 ft. Fl. Oct.—Nov. (extremely rare in this area).

Sub-Tribe GASTRODIEAE. Genus *Gastrodia*.

- G. sesamoides* R.Br. "Potato Orchid". Mt. Keira, Scout Camp area, also recorded at Huskisson, S. Coast). In sandstone and red loam. Alt. up to 2000 ft. Fl. Oct.—Nov.

Sub-Tribe SPIRANTHEAE. Genus *Spiranthes*.

- S. sinensis* (Pers.) Ames. Saddleback Mt., red loam, Jamberoo

Mt., sandstone, swampy flats. Alt. 0 to 2000 ft. Fl. Nov.—March.

Tribe II. LIPARIDINAE. Genus *Liparis*.

- L. *reflexa* Lindl. "Yellow Rock Orchid". Kiama, Minnamurra Falls, widespread in district on rocks. Alt. 500 to 1500 ft. Fl. April-July.

Group B.—PLEURANTHAE

Tribe III. PHAIINAE. Genus *Calanthe*.

- C. *veratrifolia* R.Br. "Christmas Orchid". Kiama, in shaded gullies, red soil. Alt. 200 ft. approx. Fl. Dec.—Feb.

Tribe IV. DENDROBIINAE. Genus *Dendrobium*.

1. *D. speciosum* Sm. "King Orchid or Rock Lily". Widespread along the mountain range, on rocks and trees. Alt. 250 to 3000 ft. Fl. Aug.—Oct.
2. *D. aemulum* R.Br. "Iron-bark Orchid or White Feather Orchid". Minnamurra Falls, on trees (Brush Box). Alt. 200 to 1500 ft. Fl. Aug.—Oct.
3. *D. tetragonum* Cunn. "Tree Spider Orchid". Kiama, Minnamurra Falls, on trees in shaded gullies. Alt. 100 to 2000 ft. Fl. Aug.—Nov.
4. Varieties *Hayesianum* Gilbert & variable Gilbert are also found in district, all data same as type.
5. *D. gracilicaule* F. v M. "Yellow-Brown Orchid". Kiama, on trees. Recorded by Somerville in 1911 (Orchids of N.S.W. Rupp, 1943). Fl. Aug.—Oct.
6. *D. teretifolium* R.Br. "Clematis Orchid or Rat Tail Orchid". Minnamurra River on *Casuarina* species in swamps. Alt. sea-level. Fl. July—Sept.
7. *D. striolatum* Reichb. f. "Streaked Rock Orchid". Jamberoo Mt., on sandstone rocks. Alt. 2000 ft. Fl. Sept.—Dec.
8. *D. pugioniforme* Cunn. "Dagger Orchid." Widely spread in rain forest in district on rocks and trees, usually in shade. Alt. 10 to 2000 ft. Fl. Oct. — Dec.
9. *D. linguiforme* Sw. "Thumb Nail Orchid." Kiama and widespread areas, on rocks and trees, in moist and dry conditions. Alt. sea-level to 2100 ft. Fl. Sept.—Nov.

Tribe V. BULBOPHYLLINAE. Genus *Bulbophyllum*.

1. *B. crassulifolium* (Cunn.) Rupp. "Wheat Leaf Orchid." Kiama, Minnamurra Falls, Jamberoo Mt., on trees and rocks. Alt. 500 to 2000 ft. Fl. Sept.—Nov.
2. *B. minutissimum* F.v.M. "Minute Shield Orchid." Kiama, on *Ficus* species in gullies and on ridges. Alt. 100 to 700 ft. (Author's collection, first record of collection since 1893 and recorded again by author at Milton, 60 miles further south than ever before.) Fl. Oct.—Nov.
3. *B. exiguum* F.v.M. "The Creeping Orchid." Kiama, and in numerous other localities in district. Alt. 400 to 2100 ft. Fl. Feb.—May.

Tribe VI. CYMBIDIINAE. Genus (1) *Dipodium*.

- D. punctatum* (Sm.) R.Br. "Hyacinth Orchid". Widespread in red to sandy soils. Alt. 0 to 2000 ft. Fl. Oct.—Feb.

Genus (2) *Cymbidium*. *C. suave* R.Br. "Snake Orchid." Widespread in district on edge of brush forest and in swamps. Alt. 0 to 2100 ft. Fl. Sept.—Jan.

Tribe VII. SARCANTHINAE. Sub-Tribe AERIDEAE.

- Genus (1) *Thrixspermum*. *T. tridentatus* (Lindl.) Rupp. (syn. *Sarcantus*.) "Tangle Root Orchid." Widespread in rain forest.



- Saddleback Mt., Minnamurra Falls, on trees usually over water courses. Alt. 100 to 2000 ft. Fl. Sept.—Nov.
- Genus (2) *Sarcochilus*. 1.S. *falcatus* R.Br. "Orange Blossom Orchid." In rain forest gullies. Kiama, Minnamurra Falls, Mt. Keira Scout Camp. Alt. 100 to 1000 ft. Fl. mainly Aug.
- 2.S. *australis* (Lindl.) Reichb.f. "The Butterfly Orchid." West Dapto, on trees at foot of range. Alt. 200 to 2100 ft. Fl. Oct.—Nov.
- 3.S. *olivaceus* Lindl. "Golden *Sarcochilus*." Minnamurra Falls, foothills Jamberoo Mt., on trees, rarely on rocks. Alt. 200 to 1500 ft. Fl. Oct.—Nov.
- 4.S. *Hillii* (F.v.M.). "Little Gem." Curry's Hill, Gerringong, on short scrub overlooking waterfall. Alt. 1800 ft. Fl. Oct.—Jan.



### THE CULTIVATION OF NATIVE PLANTS

The most satisfactory method of propagating native plants is by means of cuttings for these not only flower more quickly but are true to type. My method of striking cuttings is to select soft tips from one to two inches long, place them in water for several hours, take them out, cut about half an inch off neatly, remove most of the leaves, and the cutting is then ready for potting.

I use terracotta flower-pots 6 to 8 inches in diameter with a few crocks or stones for drainage, and partly fill them with sand—but the last two inches with coarse sand or soil from the same area as the native plant. I plant them closely, keep them in semi-shade and never allow them to dry out. This method is suitable for humid, coastal regions. Other growers in dry areas grow them in a glass house or cover them with glass; others recommend putting the pots in polythene bags to conserve the moisture. The easiest plants for beginners to try are *Westringia rosmariniformis*, *Bauera rubiodes*, or *Olearia dentata*.

When growing from seed it should be gathered when mature but not ripe, then put into an open container and left to ripen. *Banksias* need to be slowly heated in the oven to open or left in a sunny corner of the garden. *Acacia* can be placed in very hot water before planting to assist germination. Prepare a seed box in the same way as for cuttings, top with soil from the natural habitat of the seed plant, scatter the seeds over the surface of the soil and sprinkle with soil, or if larger seeds press them into the soil. Water cautiously for many natives suffer from over-watering. Transplant to tins when seedlings are 2 to 3 inches high and transplant to permanent positions when from 6 to 8 inches high. Always remember it is necessary to have a permit for collecting seeds or cuttings from National Parks.

A. N. Croucher.

## MALABAR OUTING ON NOVEMBER 1st, 1959

Our non-Naturalist friends ask what do we do on our frequent excursions. Well! We visit many places unknown to us or favoured by us because of their natural beauty, trees and flowers, or zoological, geological or marine interest—lunch or tea out of doors, much more enjoyable than indoors—talk and walk—return refreshed and always make a list of plants and flowers seen. One such list taken at Malabar follows—and remember unless we protect our heritage not much will remain. The Outings Committee realises sadly how many of our haunts have become closed to us.

## PLANTS AT MALABAR

<i>Acacia discolor</i> (S)	<i>Hibbertia volubilis</i> (F)
" <i>suaveolens</i> (S)	"  var. (F)
" <i>myrtifolia</i>	"  var. (F)
" <i>longifolia</i>	<i>Hydrocotyle</i> var. (F)
"  var.	<i>Kennedyia rubra</i> (F)
<i>Actinotis helianthus</i> (F.S)	<i>Kunzea ambigua</i> (F)
" <i>minor</i> (F)	<i>Lambertia formosa</i> (F)
<i>Angophora costata</i>	<i>Lasiopetalum rufum</i> (S)
<i>Baeckea compacta</i> (F)	<i>Leptospermum laevigatum</i> (S)
<i>Banksia asplenifolia</i>	" <i>arachnoideum</i> (S)
" <i>ericifolia</i> (F)	" <i>flavescens</i> (F)
" <i>integrifolia</i> (F)	" <i>scoparium</i> (F)
" <i>serrata</i> (F)	" <i>attenuatum</i> (F)
<i>Blandfordia nobilis</i> (F)	<i>Lomatia ilicifolia</i>
<i>Bossiaea scolopendria</i> (F.S)	<i>Marsdenia suaveolens</i> (F)
" <i>heterophylla</i> (S)	" <i>longifolia</i> (S)
<i>Callistemon citrinus</i> (F)	<i>Macrozamia spiralis</i>
" <i>linearis</i> (F)	<i>Melaleuca nodosa</i> (F)
"  " <i>Var. rigidus</i> (F)	" <i>armillaris</i> (F)
" <i>pinifolius</i> (F)	" <i>thymifolia</i> (F)
<i>Ceratopetalum gummiferum</i> (F)	<i>Monotoca elliptica</i> (S)
<i>Chloanthes Stoechadis</i> (F)	<i>Patersonia sericea</i> (F)
<i>Conospermum ellipticum</i> (F)	<i>Persoonia lanceolata</i> (F)
<i>Dampiera stricta</i> (F)	<i>Phragmites communis</i>
<i>Dianella revoluta</i> (F)	<i>Pimelea linifolia</i> (F)
" <i>coerulea</i>	<i>Pittosporum revolutum</i>
<i>Dillwynia ericifolia</i> (F)	<i>Platylobium formosum</i> (F)
<i>Dodonaea triquetra</i>	<i>Platysacé</i> var. (F)
<i>Elaeocarpus cyaneus</i> (F)	<i>Scaevola hispida</i> (F)
<i>Epacris longiflora</i> (F)	<i>Smilax glycyphylla</i>
" <i>microphylla</i>	<i>Stackhousia linarifolia</i> (F)
<i>Eriostemon buxifolius</i> (F)	<i>Stylidium laricifolium</i> (F)
" <i>lanceolatus</i> (F)	<i>Stypandra glauca</i> (F)
<i>Eucalyptus botryoides</i>	<i>Styphelia triflora</i>
<i>Glochidium ferdinandi</i>	" <i>viridis</i> (F)
<i>Hakea gibbosa</i> (S)	<i>Thysanotus Patersoni</i> (F)
" <i>teretifolia</i> (S)	<i>Utricularia</i> var. (F)
" <i>dactyloides</i> (S)	<i>Westringia rosmariniformis</i> (F)
" <i>sericea</i> (F)	<i>Woolisia pungens</i> (F)
<i>Hardenbergia monophylla</i> (F)	Ferns, mosses, lichens, sedges.
<i>Helichrysum</i> var. (F)	(F) = Flowering
	(S) = Seeding.

## IDENTIFICATION OF FRUITS

By Phillipa Croucher.

The word "Fruit" in our vocabulary means a sweet part of a plant eaten raw or cooked, but to a botanist it is a very loose term, for much of the fruit we eat is not strictly 'fruit'; indeed some that we eat as vegetables (a word unknown to the botanist) is true fruit.

What then is a true fruit? It is a pericarp formed from the swollen ovary wall (part of the female section of the flower), and developed to protect the seed inside. Later it is often used to aid seed dispersal. Any other type of formation is a false fruit as the strawberry, rosehip, and pomes (apples, pears, quinces,) where the receptacle swells creating the appearance of a fruit although by definition it is not so. Likewise the mulberry, pineapple, and fig are inflorescences (collections of flowers). As we shall find later the term "berry" is also used loosely with the popular definition quite different from that of a Botanical berry where the suffix "berry" is rarely used.

The pericarp may be succulent (fleshy) or dry. Many of these dry fruits split to disperse seed and so two further divisions occur—dehiscent (splitting) and indehiscent (non-splitting) fruit.  
Succulent Fruits.

**Drupes.** These are stone fruit, the endocarp, or innermost layer of the pericarp being hard. These have two layers in the pericarp. Examples. Peach, cherry, blackberry, (a collection of drupes), cocoonut, almond and walnut.

**Berries.** These have only two layers of pericarps, both fleshy.

Examples: Date, orange, banana, pumpkin, marrow, gooseberry.

**Dry dehiscent fruit.**

**Follicle.** These split along one side only.

Examples: Waratah, hakea, grevillea, oleander.

**Legume.** These split along two sides to release seed.

Examples: Acaçia, lupin, pea, peanut and all native pea flowers.

**Capsules.** These are complicated structures, all splitting by different means.

Examples. Eucalypt, leptospermum, poppy, snapdragon, violet.

**Dry indehiscent fruit.**

**Nuts and Achenes.** These have only slight technical differences mainly in size.

Examples: Acorn, Ash, Elm.

(Note that "nut" is a misrepresented botanical term as so many fruits with the suffix "nut" are not in this classification.)

**Caryosis.** This comprises all grains with the testa (seed coat) and pericarp fused together.

Examples. Corn, oats, rice, rye.

These groups can be subdivided further to give a more accurate classification of true fruit, but for the amateur a knowledge of these will greatly enhance the study of Botany and make the subject more interesting and intelligible.

## OTHER ITEMS

Mr. Nathan sent in an interesting account of keeping a hairy caterpillar which he fed on Cheese tree leaves (*Glochideon ferdandi*) through its larval stage until it pupated and emerged into a handsome gum moth of  $3\frac{1}{4}$  inch span (*Anthela astata*). He watched it from October 14 to November 12 when it pupated, and again to December 14—so fixing its pupal stage at about one month.

He also tells us that the white Blue Wren which he described in the last issue and which he has watched for about  $6\frac{1}{2}$  years has disappeared from Vacluse and is most probably dead.

Miss Julie O'Dean, a junior member, wrote a short description of a sea-urchin she saw at Maroubra "eating a sea lettuce. Six inches in diameter with a circumference of about eighteen inches, it had dark red spines on a dark red body".

Mr. Nathan also reminded us of an unusual sight at the Rocky Creek outing in July when members, many for the first time, saw a large Koala in its native habitat.

Miss English heard a commotion in the garden and saw a Kookaburra battering a round four compartment mouse trap. For the next half hour it bashed the trap until a dead mouse fell out but a second Kookaburra swooped down and carried off the mouse. Have you ever seen a Kookaburra trying to bash a chop bone? It keeps him busy for hours. We watched him for two hours and left him still at it.

Our special peewit (magpie lark) has a regular technique when feeding centipedes to his young; he picks off each leg, then tenderizes the body in his beak, retrieves the legs and carries all to his young. Funnel Web spiders are treated in the same way!

## REVERIE.

"I wonder what it would be like to see  
This beauty spot without a tree, a bird or bee,  
But only litter, left by you and me."

A member of a Garden Club on an excursion with us was so impressed by this inscription in Goulburn's beautiful little central Belmore Park that she passed it on hoping it might be a deterrent to "litterbugs" while out picknicking.

We Naturalists are good, but we are not yet perfect!

## WATER BIRDS OF NORTH BRIGHTON

By A. N. Croucher.

My home is well situated for the observation of various sea and swamp birds. It is a quarter of a mile from the western shore of Botany Bay and a similar distance from Muddy Creek, a tidal estuary of Cooks River. The first half mile of this is a swampy parkland with patches of *Casuarina glauca*. The eastern bank is edged with Mangrove (*Avicennia*). At this point a busy road intersects the creek, and it becomes a cemented channel running between market gardens and low-lying greenbelt land.

Naturally the predominant bird is the silver gull (*Larus Novae-hollandiae*) which is present in hundreds, particularly in stormy weather; pied cormorants (*Phalacrocorax varius*) spend most of their time on small craft anchored in the creek. Little grass birds (*Megalurus gramineus*) are there too.

The market gardens are a haven for spur-winged plover (*Lobibyx-novae-hollandiae*) whose strange cries are to be heard as they fly overhead day or night. The blue crane (*Notophoyx novae-hollandiae*) and the egrets (*Egretta varius*) haunt the creek at low tide and seem quite unperturbed by passing traffic. At other times, they are to be seen foraging for titbits in the gardens together with gulls and a flock of straw-necked ibis and another of white ibis, (*Threskiornis spinicollis* and *T.molucca*) which appear after heavy rain. An occasional nankeen night heron (*Nycticoyax caledonicus*) spends a few weeks at a time in a nearby pinetree.

In addition to these birds observed from my home there are numerous birds to be seen on the Eastlake swamps and mudflat at the northern end of Botany Bay, approximately two miles away. These include the following: Bartailed Godwit (*Limosa lapponica*), Curlew-sandpiper (*Erolia testacea*), New Zealand Black-backed gull. Red-capped Dotterel (*Charadrius ruficapillus*), Coot (*Fulica atra*), Little Grebe (*Podiceps ruficollis*), Stint (*Erolia ruficollis*), Eastern Swamp hen (*Porphyric melanotus*), Dusky Moorhen (*Gallinula tenebrosa*), Little Grass-Bird (*Megalurus gramineus*), Crested Tern (*Sterna bergii*), Swamp Harrier (*Circus approximans*), Black Duck (*Anas superciliosa*) and Black Swan (*Cheopis atrata*). The latter reared two young on the aerodrome apparently untroubled by the close proximity of the planes.

## EELS AND PLOVER

As a child in England I had the good fortune to witness three unforgettable scenes. I watched a vixen play with her cubs one bright moonlight night—such a beautiful mother and fascinating babies and such fun they had! We mourned for we lived in a fox-hunting county!

Another time I had been sent on a message to a farm and on the way home was about to crawl through a hedge leading to a wide stretch of park (belonging to one of the stately homes of England) when I stopped in amazement. The park, as far as I could see, was covered with moving birds, Crested Plover, hundreds and hundreds of them, yet moving in quite an orderly pattern. They were all in sets of two, face to face about eight feet or so apart, separated from the next pair by about four feet and quite close to the pair behind. As I watched, one bird of each pair danced stiff-legged towards its opposite and back, then the opposite danced forward while the first waited, then both advanced without meeting and retreated. Again and again the same was going on. It looked as though they were dancing sets of Lancers. Now and again a pair would fly off together. I rushed home, to be told I had seen the Plovers' mating dance. Strangely no one else seemed to have seen it and never again was I lucky enough to see it.

The common English Plover is the Lapwing, often called the Peewit, in France the Dixhuit, because of its wailing cry. A handsome bird with crest and upper parts a bronzy green, black throat and breast, and under parts mostly white, it breeds in April, and the first egg found used to be sent to the Lord Mayor of London, who acknowledged the very first he received in *The Times*. Boiled Plover eggs were much favoured at a Mansion House or Guildhall banquet. The Lapwing when disturbed pretends to have a broken wing, and the male bird runs or flies slowly to lead any robber away from his nest.

That part of the park had a large lake higher up and through the lower part ran a small stream, so narrow we could easily jump it. Again I had been to the farm and crawled through the hedge, but soon I was jumping frantically from tussock to tussock. The park was a moving mass of squirming snakes, dark thick things two to five feet or more in length. I jumped and jumped until I realised all were going the same way and quite ignoring any obstruction—me included—in their path. They were then in the park, and childlike I did not wait to see where they were going or if they would cross a road, but hurried home with my tale of thousands of snakes, to be told I had seen something few people ever saw—migrating eels. They were making their way to the Loddon, thence to the Thames or Severn, and so to the ocean and the Sargasso Sea, 3000 miles or more away, to breed and die. From that Sea years before they had started as wee glass eels, then developed into elvers, and when about six inches or more long had begun their freshwater existence in the marshes, lakes and streams of England, and now, their cycle of life almost completed, were on their way back to die.

G. Brewin.



